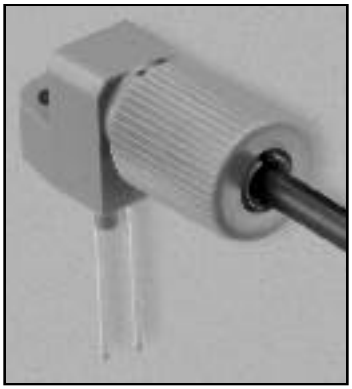


DESCRIPTION

The IF-E91A and IF-E91B are infrared LEDs in Industrial Fiber Optics' family of low-cost, medium-frequency, short-distance fiber optic LEDs and detectors. Each LED and detector consists of a polycarbonate (PC) housing, an internal active element such as an LED or photodetector subcomponent, and a cinch nut to hold the fiber in place. The PC housing retains the active element and the cinch nut while optimizing coupling between the active element and the jacketed 1000 µm plastic fiber.

Working with this family of fiber optics is simple: No special tools or training required. Only a sharp knife or razor blade is needed to terminate the plastic fiber. When the fiber is inserted in the LED or detector housing, tighten the cinch nut. Thereafter, the fiber can be removed simply by loosening the nut.

APPLICATIONS

- Household Appliances
- Motor Controller Triggering
- PC-to-Peripheral Links
- Medical Instruments
- Automotive Electronics
- Audio Systems
- Electronic Games
- Robotics Communications

FEATURES

- No Optical Design Required
- Mates with Standard 1000 µm Core Jacketed Plastic Fiber Cable
- Internal Micro-Lens for Efficient Coupling
- Inexpensive Plastic Connector Housing
- Connector-Less Fiber Termination and Connection
- Interference-Free Transmission from Light-Tight Housing
- Excellent Linearity

MAXIMUM RATINGS

(T_A = 25°C)

Operating and Storage Temperature Range (T_{OP}, T_{STG}) .....-40° to 85°C

Junction Temperature (T_J) .....85°C

Soldering Temperature (2mm from case bottom) (T_S) t≤ 5s .....240°C

Reverse Voltage (V_R).....3 V

Power Dissipation (P_{TOT}) T_A = 25°C.....100 mW

De-rate Above 25°C.....1.33 mW/°C

Forward Current, DC (I_F)
IF-E91A.....50 mA
IF-E91B.....100 mA

Surge Current (I_{FSM}) t≤ 10 µsec
IF-E91A.....2 A
IF-E91B.....2 A

CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	IF-E91A	IF-E91B	Unit
Peak Wavelength	λ_{PEAK}	950	880	nm
Spectral Bandwidth (50% of I_{MAX})	$\Delta\lambda$	40	80	nm
Output Power Coupled into Plastic Fiber (1 mm core diameter). Distance Lens to Fiber ≤0.1 mm, 10 cm polished fiber, I_F=20 mA	Φ_{min}	>100 -10	>75 -11.2	µW dBm
Switching Times (10% to 90% and 90% to 10%) (R_L=47 Ω, I_F=10 mA)	t_r, t_f	1.0	0.5	µs
Capacitance	C_0	25	25	pF
Forward Voltage (I_F=50 mA)	V_f	1.5 max	1.7 max	V
Temperature Coefficient, λ_{PEAK}	TC_λ	0.3	0.3	nm/K

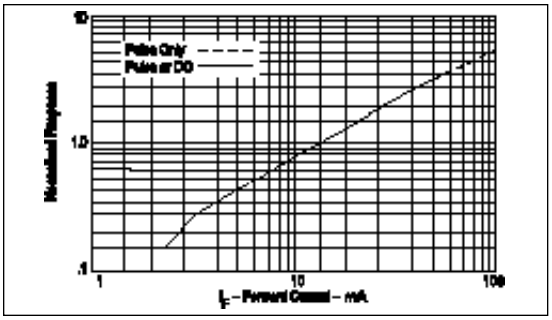


FIGURE 1. Normalized power launched versus forward current.

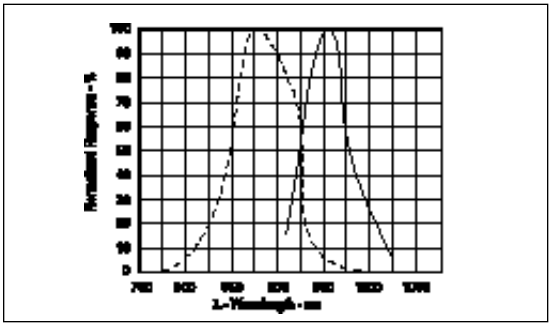


FIGURE 2. Typical spectral output vs. wavelength.

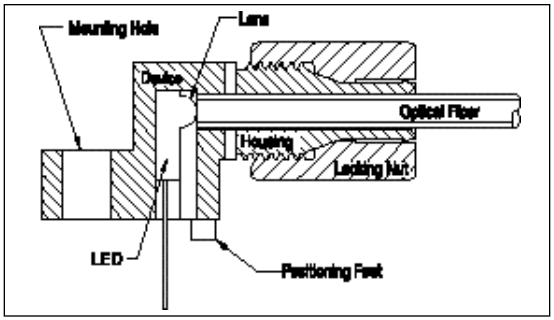
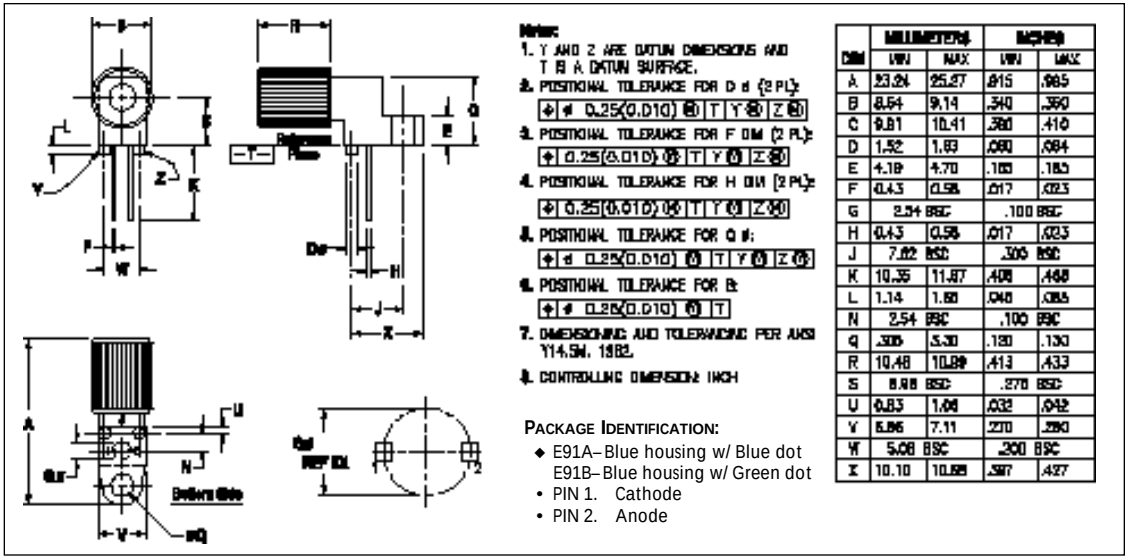


FIGURE 3. Cross-section of fiber optic device.

FIBER TERMINATION INSTRUCTIONS

1. Cut off the ends of the optical fiber with a single-edge razor blade or sharp knife. Try to obtain a precise 90-degree angle (square).
2. Insert the fiber through the locking nut and into the connector until the core tip seats against the internal micro-lens.
3. Screw the connector locking nut down to a snug fit, locking the fiber in place.



Notes:
1. Y AND Z ARE DATUM DIMENSIONS AND T IS A DATUM SURFACE.
2. POSITIONAL TOLERANCE FOR D ø (2 PL):
   ⌖ | ø 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
3. POSITIONAL TOLERANCE FOR F DIA (2 PL):
   ⌖ | 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
4. POSITIONAL TOLERANCE FOR H DIA (2 PL):
   ⌖ | 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
5. POSITIONAL TOLERANCE FOR Q ø:
   ⌖ | ø 0.25(0.010) Ⓜ | T | Y Ⓜ | Z Ⓜ
6. POSITIONAL TOLERANCE FOR R:
   ⌖ | ø 0.25(0.010) Ⓜ | T
7. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
8. CONTROLLING DIMENSION: INCH

Ltr	MILLIMETERS MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	23.24	25.27	.915	.995
B	8.64	9.14	.340	.360
C	9.91	10.41	.390	.410
D	1.52	1.93	.060	.084
E	4.19	4.70	.165	.185
F	0.43	0.58	.017	.023
G	2.54 BSC		.100 BSC	
H	0.43	0.58	.017	.023
J	7.62 BSC		.300 BSC	
K	10.35	11.87	.408	.468
L	1.14	1.60	.045	.065
N	2.54 BSC		.100 BSC	
Q	.305	5.30	.120	.130
R	10.48	10.99	.413	.433
S	8.88 BSC		.270 BSC	
U	0.83	1.06	.033	.042
V	6.86	7.11	.270	.280
W	5.08 BSC		.200 BSC	
X	10.10	10.85	.397	.427

PACKAGE IDENTIFICATION:
- ◆ E91A–Blue housing w/ Blue dot
  E91B–Blue housing w/ Green dot
- PIN 1. Cathode
- PIN 2. Anode

FIGURE 4. Case outline.